

## 4.3.4 REFERENCE SAMPLES

Standard-reference-water samples (SRS) and reference-material samples are used to answer questions, such as "What are the bias and variability associated with field-handling, shipping, and laboratory procedures?" Reference samples commonly are submitted from the field as blind samples (section 4.3.5) and as split replicate samples (section 4.3.2.C) because the composition is known, eliminating guesswork regarding the accuracy and correctness of the analytical results.

Reference samples with a natural water matrix are currently available to USGS personnel from the USGS Branch of Quality Systems. NIST and some commercial laboratories also supply reference materials.

*When preparing reference samples, follow the procedure listed below:*

1. **Prepare this sample before leaving for the field site.**
  - a. Relabel the reference-sample bottle with the site identification code and a field date and time. The sample should appear as if it is an environmental sample.
  - b. Process SRS or reference-material samples in a clean environment in the office laboratory, under a laminar-flow hood or other protective chamber, to avoid atmospheric contamination. **Do not process these QC samples under a fume hood.**
  - c. Rinse each sample bottle three times with a small volume of SRS or reference-material sample, fill the bottle with the reference solution, and cap securely.
2. Prepare an ASR form; record the SRS or reference-material sample identification code (from the original container) in field notes.
3. Pack the sample and the accompanying ASR form to take to the field site.
4. Ship SRS or reference-material samples in the same container with the environmental and other QC samples collected at the field site.